

ABSTRACT OF THE DISCLOSURE

A system and method for quantum key distribution uses a regulated single-photon source to sequentially generate a first photon and a second photon separated by a time interval Δt . The
5 two photons are directed through a beam splitter that directs each photon to one of two transmission lines, which lead to two respective receivers. When one of the photons arrives at a receiver, it passes through an interferometer. One arm of the interferometer has a path length longer than the other arm by an amount equivalent to a photon time delay of Δt . The photon is then detected in one of three time slots by one of two single-photon detectors
10 associated with each of the two interferometer outputs. Due to quantum-mechanical entanglement in phase and time between the two photons, the receivers can determine a secret quantum key bit value from their measurements of the time slots in which the photons arrived, or of the detectors where the photons arrived.